

# The Value Engineering Study Process at EPA Fund Lead Sites USACE NORTHWESTERN DIVISION



## **2009 Engineering Forum Wednesday Business Session**

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**US Army Corps  
of Engineers®**

# VE at EPA Fund Lead Sites

- **Policy**
- **Planning**
- **VE Process**
- **Results**

# VE at EPA Fund Lead Sites

- **Policy Directives**

- Federal OMB Circular 131 1988, rev 1993
- Public Law 104-106 (1996) Section 4306
- FAR 48.101 RD; 48.102 RA
- OSWER Directive OSWER 9335.5-24  
“Value Engineering for Fund  
Financed Remedial Design and  
Remedial Action Projects” April 14,  
2006

# VE at EPA Fund Lead Sites

|                                                         |                                                                           |                                                                                               |
|---------------------------------------------------------|---------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| VE During Remedial Design                               | If the RA cost (including LTRA) is estimated to be less than \$25 Million | A VE screen, followed by a VE study, if recommended by the screen                             |
|                                                         | If the RA cost (including LTRA) is estimate to be \$25 Million or greater | A full VE study should be performed                                                           |
| VE During Remedial Action and Long Term Remedial Action | If the RA or LTRA project cost is estimated to be greater than \$100,000  | The contract specifications for the project should include a VE incentive clause              |
|                                                         | If the RA or LTRA project cost is estimated to be \$100,000 or less       | Inclusion of a VE incentive clause in the contract specifications for the project is optional |

# VE at EPA Fund Lead

## Sites

For a given project (or phase of a project) to qualify for initial RA funding, the RD for that project should undergo the VE process in accordance with the table. As a prerequisite to approval of the project for initial RA funding, the priority panel for RA funding should confirm that the appropriate Regional Branch Chief has certified that the project is (or will be) in compliance with the VE requirements for RD.

[http://www.environmental.usace.army.mil/guide\\_process.htm](http://www.environmental.usace.army.mil/guide_process.htm)

OSWER 9335.5-24 APRIL 14, 2006

# VE at EPA Fund Lead

## • **Funding:**

- EPA HQ funded VE Studies during 2007 and scheduled for 2008
- New requests, EPA regions are responsible for funding the VE Study using the USACE Team.
- If funding can not be provided by the region, EPA Regional staff and/or USACE staff should contact EPA HQ's (Emily Johnson/ Katherine Garufi) to see if EPA HQs funds may be made available to fund the project.

## • **USACE Staff Capacity:**

- For any new project requests, coordinate with Dave Jaros - USACE EMCX to ensure the VE Team is available to conduct the study within the schedule requested by the EPA Region.

# VE at EPA Fund Lead

## Sites Planning

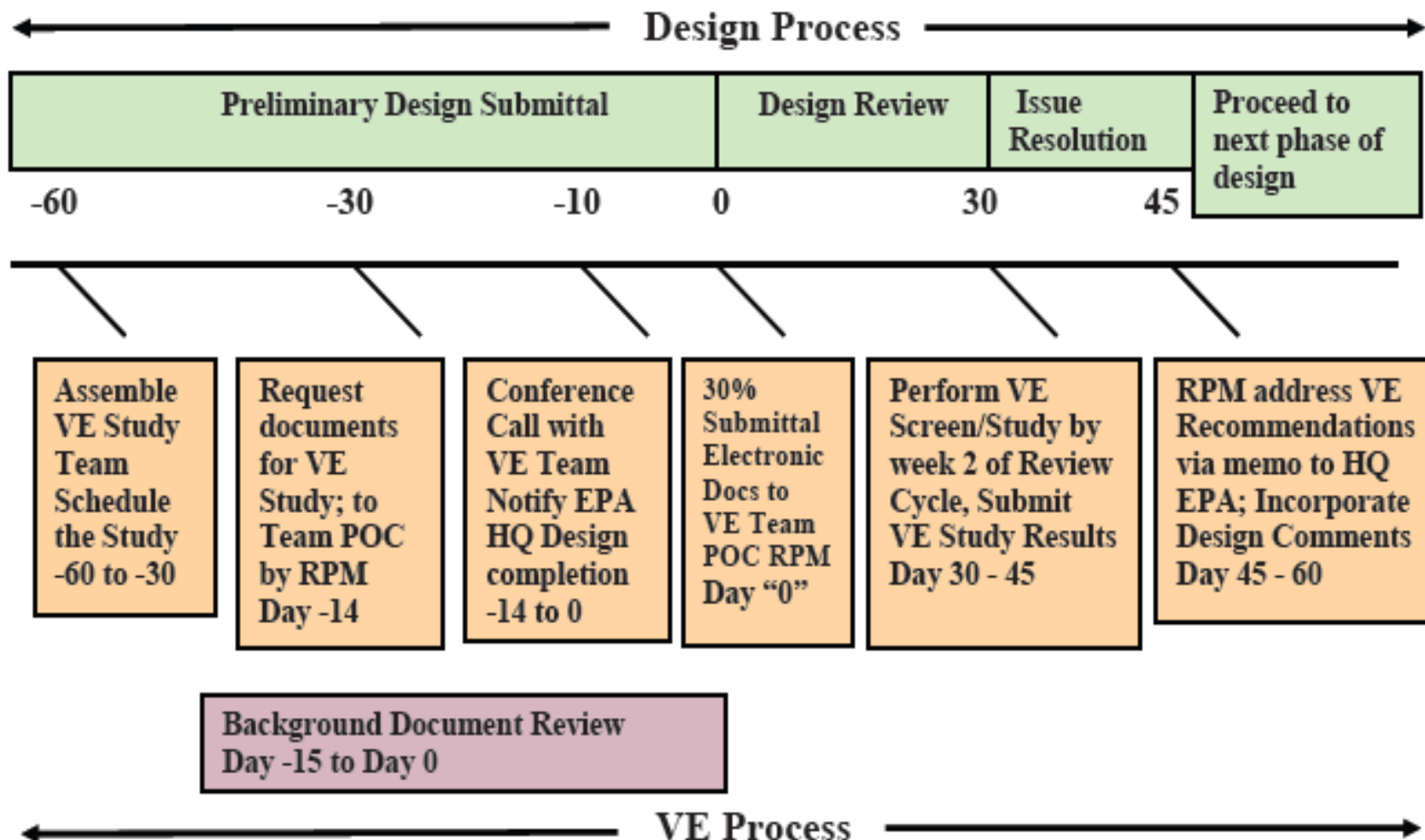
- A Fund Lead Site is Identified
- VE Coordinator Contacts the RPM
- Schedule Developed
- PDT is Assembled and Funded
- PDT Document Review
- Conference Call (RPM/Team)

# Value Engineering Study Team

- **Independent of the design team, with appropriate experience and expertise**
- **Members preferably have 40 hours of training sponsored by the Society of American Value Engineering (SAVE);**
- **Team facilitator should have completed the requirements for a Certified Value Specialist (CVS) IAW SAVE (Society of American Value Engineering)**

# Role of the RPM in the VE Study

- **A resource for information on the ROD, policy, and the reasoning behind decisions driving the design**
- **Provides advice to help VE team avoid studying parts of the design that cannot be changed**
- **Prepares written response to VE Report with reasons for accepting or rejecting each VE recommendation**



**Schedule for VE Study/Screen**

# VE at EPA Fund Lead

## Sites Definitio n

- Value Engineering is a function oriented, systematic, dynamic **TEAM** approach to enhance the value of a project by increasing benefit and/or reducing unnecessary resource utilization

# VE at EPA Fund Lead Sites

- **VE Study is conducted to:**
  - **validate current design approach**
  - **identify opportunities to reduce cost**
  - **ensure design incorporates best design and construction practices**
- **VE should be done (at the end of preliminary design) for all fund lead remedial designs**

# What is Value?

$$\text{Value} = \frac{\text{Benefits}}{\text{Resources}}$$

Where:

- Value is derived from a product, project, or service
- Benefits provided by product, project, or service
- Resources are what is needed to produce it

# The Value Expression

$$\begin{array}{c} \uparrow \\ \uparrow \text{Value} = \frac{\text{Function} + \text{Quality} + \text{Performance}}{\text{Cost} + \text{Time}} \end{array}$$

Diagram illustrating the Value Expression formula:

- The numerator consists of three components: Function, Quality, and Performance, each with an upward arrow indicating a positive relationship with Value.
- The denominator consists of two components: Cost and Time, with a downward arrow indicating a negative relationship with Value.

# Relate Functions to Each Other

- **Collect/Identify Required Functions**
- **Link functions by determining relationship using how/why logic**

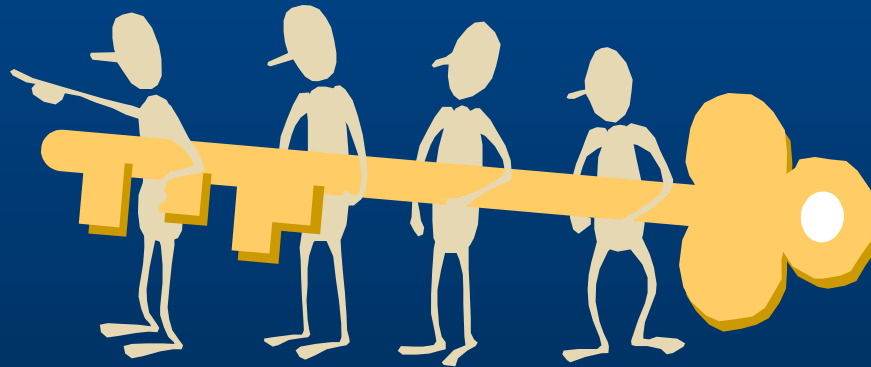


# American Brass Inc., Function Model

| Item                     | Aspects of Item                                                                         | Function            |
|--------------------------|-----------------------------------------------------------------------------------------|---------------------|
| Transportation           | Haul Soil/Debris                                                                        | Remove Contaminants |
| Excavation               | Ecosystem<br>Human Health<br>Water<br>0-1 feet<br>1-10 feet<br>10-GW<br>GW to max depth | Remove Contaminants |
| Disposal                 | TSCA, RCRA C/D<br>EPA Facility<br>Approval<br>Waste Acceptance<br>Criteria              | Isolate Waste       |
| Confirmation<br>Sampling | Field Screen<br>Fixed Lab<br>Test Frequency                                             | Verify Removal      |

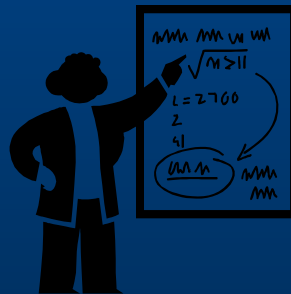
# The VE Process

- Information Phase
- Functional Phase
- Speculation Phase
- Analytical Phase
- Development Phase
- Presentation Phase
- Implementation



# Presentation Phase

- Each Recommendation Stands Alone
- Present Concept and Increased Value Potential
- Each Recommendation is Presented for Complete Understanding
- Final Written Report



# VE at EPA Fund Lead

## Results of Pilot Program

| Site                        | Region | VE Study Cost         | RA Cost Estimate | VE Identified Savings          | VE Savings Identified |
|-----------------------------|--------|-----------------------|------------------|--------------------------------|-----------------------|
| White Chemical, NJ          | 2      | \$40,000              | \$7.7 M          | \$500,000                      | \$500,000             |
| Horseshoe Road, NJ          | 2      | \$50,000              | \$52.5 M         | \$12,000,000                   | \$10,600,000          |
| Bountiful Woods OU1, UT     | 8      | \$20,000              | \$1.8 M          | \$65,000                       | NR                    |
| Upper Ten Mile, MT          | 8      | \$43,000              | \$7.7 M          | \$935,000                      | NR                    |
| Bountiful Woods OU 2, UT    | 8      | \$43,000              | \$16.4 M         | >\$2,000,000*                  | NR                    |
| Jasper/Hart (2 Sites), TX   | 6      | \$42,000              | \$13 M           | \$397,000                      | \$360,000             |
| Cornell Dubilier, NJ        | 2      | \$61,500              | \$77.4 M         | \$6,570,000                    | \$4,967,000           |
| Outboard Marine Corp, IL    | 5      | \$35,000              | \$35.3 M         | \$5,308,000                    | \$4,820,000           |
| American Brass Headland, AL | 4      | \$37,100              | \$5.8 M          | \$2,520,000                    | NR                    |
| Elizabeth Mine, VT          | 1      | \$53,000              | \$16 M           | \$2,800,000                    | NR                    |
| Libby Asbestos, MT          | 8      | \$46,000              | \$20 M           | \$5,500,000                    | NR                    |
| Totals for Completed Work:  |        | \$429,200<br>*499,000 | \$253.6          | \$38,595,000<br>(\$24,775,000) | \$21,247,000          |

# Example Projects

- **Bountiful Woods, UT**
- **American Brass, AL**
- **Upper Ten Mile Creek, MT**



- **\$16.4M; \$2M Savings**
- **Dry Cleaner Facility**
- **Soil Contamination & PCE Plume**
- **Proposed Plan Stage**



- **\$5.8M; \$2.5M savings**
- **Old Manufacturing Site**
- **Heavy Metals & PCBs**
- **Soil, Groundwater, Wetland Area**
- **Peanut Farmers**



- **\$7.7M; \$1M savings**
- **Mill Tailings used as fill**
- **High lead levels**
- **Alternative water supply**
- **Wastewater disposal**

# Value Engineering Study

## Team

## Issues and Follow-up Efforts

- **RPMs need to prepare written response to VE Report with reasons for accepting or rejecting each VE recommendation**
- **Data on recommendations and actual cost savings**
- **Coordination with OSRTI conducting RSE during design phase of groundwater pump/treat projects**
- **Identification of, and funding for, future studies**

# Lessons Learned - Fund

## Lead Sites

- Up Front Planning, Communication, and RD review is Vital
- Define Boundaries (ROD)
- Designer/RPM/Stakeholder Participation is Necessary
- Initial Skepticism is not as Prevalent
- The Site Visit is Extremely Helpful
- Team Members need Advance Notice

# Value Engineering Study Team

## Links

OSWER Directive 9335.5-24 and OSWER 9335.5-24FS

[http://www.environmental.usace.army.mil/guide\\_process.htm](http://www.environmental.usace.army.mil/guide_process.htm)

OMB Circular A-131

<http://www.whitehouse.gov/omb/circulars/a131/a131.html>

Public Law 104 – 106, 1996 (4306)

[http://www.nist.gov/director/ocla/Public\\_Laws/PL104-106.pdf](http://www.nist.gov/director/ocla/Public_Laws/PL104-106.pdf)